

CLIPPEDIMAGE= EP000905786A1

PUB-NO: EP000905786A1

DOCUMENT-IDENTIFIER: EP 905786 A1

TITLE: Capacitor having a barrier layer of transition metal phosphide, arsenide, or sulphide

PUBN-DATE: March 31, 1999

INVENTOR-INFORMATION:

NAME

COUNTRY

HINTERMAIER, FRANK

DE

EUR-CL (EPC): H01L021/02; H01L021/8247, H01L027/115 ABSTRACT:

An integrated circuit capacitor has a transition metal phosphide, sulfide or arsenide barrier layer below the capacitor dielectric. An integrated circuit capacitor has (a) its lower electrode (11) connected directly or via a connection structure (7) to a doped region (3) in a semiconductor substrate (1); and (b) a barrier layer (10) of a compound of a transition metal and phosphorus, sulfur or arsenic below the capacitor dielectric (12).

Independent

claims are also included for producing the above capacitor by forming the barrier layer (10) over the entire exposed surface of the doped region (3) or the connection structure (7) or on the lower electrode (11).

INT-CL (IPC): H01L027/115; H01L021/3205

ABSTRACT:

An integrated circuit capacitor has a transition metal phosphide, sulfide or arsenide barrier layer below the capacitor dielectric. An integrated circuit capacitor has (a) its lower electrode (11) connected directly or via a connection structure (7) to a doped region (3) in a semiconductor substrate (1); and (b) a barrier layer (10) of a compound of a transition metal and phosphorus, sulfur or arsenic below the capacitor dielectric (12).

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TTL:

Capacitor having a barrier layer of transition metal phosphide, arsenide, or

sulphide

FPAR:

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Independent

claims are also included for producing the above **capacitor** by forming the barrier layer (10) over the entire exposed surface of the doped region (3) or the connection structure (7) or on the lower electrode (11).

CLIPPEDIMAGE= JP411163276A

PUB-NO: JP411163276A

DOCUMENT-IDENTIFIER: JP 11163276 A

TITLE: **CAPACITOR** HAVING BARRIER LAYER AND ITS  
MANUFACTURE

PUBN-DATE: June 18, 1999

INVENTOR-INFORMATION:

NAME COUNTRY

HINTERMAIER, FRANK DR N/A

INT-CL\_(IPC): H01L027/04; H01L021/822 ; H01L027/108 ; H01L021/8242

ABSTRACT:

PROBLEM TO BE SOLVED: To avoid oxidation of a barrier during high-temperature treatment and to obtain a high capacity with a small required area by using mainly transition elements on the one hand and using a compound comprised of phosphorus, **sulfur or arsenic, namely a phosphide of transition metal as barrier** layer on the other hand.

SOLUTION: A MOS insulating layer 6 covers a transistor. In this case, a doped area 3 is provided with a connection structure 7 comprised of tungsten. Such a structure is subjected to heat treatment in an atmosphere of PH<sub>3</sub>\* for forming a barrier layer. During treatment, a barrier layer 10 is formed with self matching on the connection structure 7 by reaction of tungsten with PH<sub>3</sub>\*. A first lower electrode 11 of a **capacitor** is formed by sputtering of a platinum layer and by adequate structuring. Consecutively, a high

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TTL:

**CAPACITOR** HAVING BARRIER LAYER AND ITS MANUFACTURE

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